

PATENT COOPERATION TREATY
PCT
INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 15 sheet(s).

3. This report contains indications relating to the following items:

- | | |
|------|---|
| I | <input checked="" type="checkbox"/> Basis of the report |
| II | <input type="checkbox"/> Priority |
| III | <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| IV | <input checked="" type="checkbox"/> Lack of unity of invention |
| V | <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| VI | <input type="checkbox"/> Certain documents cited |
| VII | <input type="checkbox"/> Certain defects in the international application |
| VIII | <input type="checkbox"/> Certain observations on the international application |

Date of submission of the demand 20 October 2003	Date of completion of the report 24 May 2004
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer L. DESECAR Telephone No. (02) 6283 2381

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/AU2003/000970

Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed.
- ☒ the description, pages 1-29, 31-51, 53-57 as originally filed,
pages , filed with the demand,
pages 30, 52 received on 8 January 2004 with the letter of 8 January 2004
- ☒ the claims, pages as originally filed,
pages , as amended (together with any statement) under Article 19,
pages , filed with the demand,
pages 58-70 received on 6 May 2004 with the letter of 6 May 2004
- ☒ the drawings, pages 1/38-38/38 as originally filed,
pages , filed with the demand,
pages , received on with the letter of
- ☐ the sequence listing part of the description:
pages , as originally filed
pages , filed with the demand
pages , received on with the letter of

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/fig.

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

- ☐ restricted the claims.
- ☐ paid additional fees.
- ☐ paid additional fees under protest.
- ☐ neither restricted nor paid additional fees.

2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.
- ☒ not complied with for the following reasons:

See Supplemental Sheet.

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☒ all parts.
- ☐ the parts relating to claims Nos.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims 1-78	YES
	Claims	NO
Inventive step (IS)	Claims 1-78	YES
	Claims	NO
Industrial applicability (IA)	Claims 1-78	YES
	Claims	NO

2. Citations and explanations (Rule 70.7)

Claims 1-78 meet the criteria set out in the PCT Article 3(2)-(4), because none of the prior art documents teaches or fairly suggests a dual function handlebar mounted actuator including a hand operated lever arrangement, means for operating a first function, means for operating a second function, the hand operated lever arrangement being arranged to separately activate at least one of the first and the second function, and the first and the second function operating means are arranged to be linked during use so that a combined first and second function can be activated.

In an other embodiment there is disclosed a dual function handlebar mounted actuator including a hand operated lever arrangement for operating a brake function and a clutch function.

In a further embodiment there is disclosed an actuator arrangement including a lever movable between a first and a second position and a master cylinder having a piston, the lever being arranged so that when it is moved towards the second position the piston is driven from an initial position increasing thereby the pressure in the master cylinder, and when the lever is released the pressure within the master cylinder is arranged to return the piston towards the initial position.

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of IV.3

The international application does not comply with the requirements of unity of invention because it does not relate to one invention or to a group of inventions so linked as to form a single general inventive concept. In coming to this conclusion the International Searching Authority has found that there are two inventions:

1. Claims 1-19, 32-34 are directed to a dual function handlebar mounted actuator including a hand operated lever arrangement and means for operating a first and a second function, involving the features as defined.
2. Claims 20-31 are directed to a dual function handlebar mounted actuator including a master cylinder actuator and a bias valve, involving the features as defined.
3. Claims 35-41, 42-48, 49-52, 53-62 are directed to a dual function handlebar mounted actuator including a hand operated lever arrangement for operating a brake function and a clutch function, involving the features as defined.
4. Claims 63-75 are directed to a dual function handlebar mounted actuator including a main lever, a first function operating arm, a second function operating arm involving the features as defined.
5. Claims 76-78 are directed to an actuator arrangement including a lever movable between a first and a second position and a master cylinder having a piston, involving the features as defined.

In assessing whether these claims possess a single general inventive concept the International Search Authority concludes as follows:

- (a) Independent claims 1, 20, 35, 42, 49, 53 and 63 share the common features in relation to a dual function handlebar mounted actuator, *activation of a first and a second function*. It is considered that unity exists *a priori* between the inventions defined in claims 1 and 20, 35, 42, 49, 53, 63 since they possess the same special technical features.
- (b) Independent claim 76 relates to an actuator arrangement including a master cylinder and a piston and does not share any features otherwise common to the claims mentioned in (a). Thus claim 76 does not have any special technical features in common with the claims mentioned in (a), within the meaning of PCT Rule 13.2 second sentence, hence lacks unity of invention with the other independent claims.

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pivot point 705 thus increasing the overall leverage of the finger operated lever 702 in actuating the piston 718a of the clutch master cylinder 718. Additionally, as the end point of the threaded adjustor 712 moves closer to pivot point 705, the tip of the clutch cylinder actuator 716 is moved further away from the centre line of the master clutch cylinder 718. This increases free play to the clutch function. As the finger operated lever 702 is moved in the direction marked by the arrow B, it also pushes on the brake free play adjustor 720 which, in turn, pushes the brake push rod 722 which takes up the free play in the brake free play adjustor 720. Accordingly, it will be appreciated that shifting the finger operated lever 702 in the direction marked by the arrow B, increases the leverage ratio to the clutch function, introduces free play in the clutch operation, takes up the free play in the brake operation and can be used to operate the brake function.

Shifting the finger operated lever 702 in the direction marked by the arrow B therefore means that although it is easier to operate the clutch function, more movement of the finger operated lever 702 in the direction marked B is required to achieve the same clutch function.

From the above it will be appreciated that the user has the ability to change the function of the inward movement (i.e. movement towards the handlebar 708) of the finger operated lever 702 during use of the actuator 700. For example, as the finger operated lever 702 is moved towards the handlebar 708 with the lever 702 in the position marked by the arrow A, first clutch operation will be achieved. However, if the finger operated lever 702 is then moved in the opposite direction (i.e. in the direction of the arrow marked B) brake function will be first initiated. The actuator 700 can be adjusted so that both brake and clutch function can be achieved with rear brake bias if the finger operated lever 702 is moved in the direction marked by the arrow B.

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Figure 19 is a chart depicting possible operational and functional characteristics of the combined brake and clutch actuator 700 shown in Figures 17 and 18. These characteristics can be changed by making various adjustments to the

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Once the ball and spring detent system 1232 has locked the brake actuation arm 1214, further travel of the lever 1201 towards the handlebar 1206 does not move the brake actuation arm 1214 until a brake initiation adjustor 1250 contacts a portion of the brake actuation arm 1214. At this point, any further
5 travel of the lever 1201 towards the handlebar 1206 will operate the brake function.

If the lever 1201 is released the brake system pressure returns the brake master cylinder piston 1222 most of the way back to the start of its stroke. The
10 brake master cylinder piston 1222 is pulled over the ball spring detent and back to an open to reservoir position by the brake actuation arm return spring 1254.

It will be appreciated that in Figure 47 no return spring is shown in the brake master cylinder 1216. However, it is envisaged that in some applications a
15 return spring may be desirable.

In the arrangement shown in Figures 47 to 50, the return of the lever 1201 to its most displaced position from the handlebar 1206 is facilitated by the clutch master cylinder piston return spring 1260. Furthermore, the profile of the cam
20 surface 1201a is tailored to ensure there is sufficient force to return the lever 1201 to its position away from the handlebar 1206. This, together with the brake actuation arm return spring returns the brake master cylinder piston 1222 to the open port to reservoir position.

25 If the foot pedal 1226 is depressed, the pedal operation cable 1224 causes the brake actuation arm 1214 to rotate around the main pivot 1204, thus operating the brake function. Also, at a point determined by an anti-stall adjustor 1270, the lever 1201 is caused to rotate around the main pivot 1204 thereby operating the clutch function. The purpose of this operation of the clutch function is to
30 help prevent stalling of the motor vehicle due to any brake function lock.

For the purpose of clarity, the mount is not shown in Figures 47 to 50. However, the main pivot 1204, the clutch rocker arm pivot and the ball spring

Claims

1. A dual function handlebar mounted actuator including:
5 a hand operated lever arrangement;
 means for operating a first function;
 means for operating a second function;
 said hand operated lever arrangement being arranged to
separately activate at least one of said first and said second function operating
10 means and wherein said first and said second function operating means are
arranged to be linked during use so that a combined first and second function
can be activated.
2. A dual function handlebar mounted actuator according to claim 1 wherein
15 the first function operating means and the second function operating means are
mechanically linked together so that a consistent overlap or separation between
the first and second functions is achieved.
3. A dual function handlebar mounted actuator according to claim 2 wherein
20 the first and second function operating means are permanently linked together.
4. A dual function handlebar mounted actuator according to claim 2 wherein
the first and second function operating means are linked during use by means
of at least one activation member.
- 25 5. A dual function handlebar mounted actuator according to claim 4 wherein
said at least one activation member is adjustable so that the point at which the
combined function is initiated is adjustable.
- 30 6. A dual function handlebar mounted actuator according to claim 3 wherein
the first and second operating means are linked by a cam arrangement.

7. A dual function handlebar mounted actuator according to claim 6 wherein the cam arrangement is adjustable to enable variation in the point at which the second function is initiated.

5 8. A dual function handlebar mounted actuator according to any one of the preceding claims wherein the lever arrangement includes a single component for contact by the user.

10 9. A dual function handlebar mounted actuator according to any one of the preceding claims wherein the hand operated lever arrangement includes a lever arranged so that movement in a first direction activates said first function operating means and further movement of said lever in the first direction to an activation point activates said second function operating means.

15 10. A dual function handlebar mounted actuator according to claim 9 wherein activation of said lever in a second direction activates said second function operating means and continued activation of said lever in said second direction activates said first function.

20 11. A dual function handlebar mounted actuator according to claim 10 further including adjustment means for adjusting the point at which the first function and/or the second function is activated.

25 12. A dual function handlebar mounted actuator according to any one of the preceding claims further including first and second actuator members, said first actuator member being arranged to activate said first function when said first operating means is activated and said second actuating member being arranged to activate said second function when said second operating means is activated.

30

13. A dual function handlebar mounted actuator according to claim 12 wherein said first and second actuator members each include adjustment

means arranged to enable variation of the point at which operation of said first and second functions occurs.

14. A dual function handlebar mounted actuator according to any one of the
5 preceding claims further including indication means to indicate to the user when the second function is initiated.

15. A dual function handlebar mounted actuator according to claim 14 wherein the indication means provides a tactile indication to the user.

10

16. A dual function handlebar mounted actuator according to any one of the preceding claims wherein said lever arrangement includes a first portion and a second portion, said lever arrangement being arranged so that movement of the first portion initially operates a first function, movement of the second portion
15 initially operates a second function and movement from a point between the first and second portions operates both the first and the second functions.

17. A dual function handlebar mounted actuator according to claim 16 wherein continued movement of either the first portion or the second portion of
20 the lever arrangement will respectively result in the operation of the second or the first functions so that the combined function is operated.

18. A dual function handlebar mounted actuator according to claim 16 further including a slide member arranged to enable the user's fingers to shift more
25 readily from said first portion to said second portion of the lever arrangement.

19. A dual function handlebar mounted actuator according to any one of the preceding claims further including a friction adjustor to enable the degree of friction between the second operating means and a portion of the actuator to be
30 adjusted so that the second operating means can be locked in a position whilst the first function operating means is varied.

20. A dual function handlebar mounted actuator including a master cylinder actuator and a bias valve, said master cylinder actuator being arranged so that actuation thereof results in a force application to the bias valve which is arranged to operate a first function, a second function or both the first and the second functions.
21. A dual function handlebar mounted actuator according to claim 20 wherein the first function is a clutch function and the second function is a brake function.
22. A dual function handlebar mounted actuator according to claim 21 further including a bias valve actuator arranged to control a bias valve so as to bias the valve to operate the clutch function, the brake function or the combined clutch and brake function.
23. A dual function handlebar mounted actuator according to claim 22 wherein the bias valve includes a piston that is arranged to operate the clutch function and the brake function.
24. A dual function handlebar mounted actuator according to claim 23 wherein the bias valve is connected to a clutch arrangement including a clutch port and a clutch return port and a brake arrangement including a brake port and a brake return port.
25. A dual function handlebar mounted actuator according to claim 24 arranged so that as the piston of the bias valve is actuated, the clutch function is operated, the brake return port is closed, the brake function is operated and the clutch port is shut.
26. A dual function handlebar mounted actuator according to claim 25 wherein following shutting of the clutch port, further travel of the piston of the bias valve will open the clutch return port.

27. A dual function handlebar mounted actuator according to claim 26 further including adjustment means arranged to provide a pre-set bias to the bias valve.

5 28. A dual function handlebar mounted actuator according to any one of claims 21 to 28 wherein the master cylinder actuator and bias valve actuator are formed as separate lever arrangement which are pivotally connected together.

10 29. A dual function handlebar mounted actuator according to any one of claims 20 to 27 wherein the master cylinder actuator and bias valve actuator are formed as a combined lever arrangement.

15 30. A dual function handlebar mounted actuator according to claim 29 wherein said lever arrangement includes a first portion and a second portion, said lever arrangement being arranged so that movement of the first portion operates said master cylinder actuator, movement of the second portion operates said bias valve actuator and movement of the lever arrangement between the first and second portions operates both the master cylinder actuator and the bias valve actuator.

20

31. A dual function handlebar mounted actuator according to claim 29 wherein the master cylinder actuator and bias valve actuator include as a single lever arrangement, said lever arrangement being arranged to move in a first direction to operate the master cylinder actuator and in a second direction to
25 operate the bias valve actuator.

32. A dual function handlebar mounted actuator according to claim 11 wherein the adjustment means includes an adjustable activating rod connected to the lever arrangement and an adjustor cam.

30

33. A dual function handlebar mounted actuator according to claim 32 wherein the adjustment means is arranged so that the activating rod can be adjusted so

that the positioning of the adjustor cam is varied, thereby adjusting the activation point of the first or second function.

5 34. A dual function handlebar mounted actuator according to claim 33 wherein actuation of the lever in the second direction increases the leverage to the first function and/or increases free play in an arrangement provided to operate the first function so as to delay operation of the first function.

10 35. A dual function handlebar mounted actuator for use with a vehicle having an engine, said actuator including a hand operated lever arrangement for operating a brake function and a clutch function, means for sensing the R.P.M of the engine and wherein said lever arrangement is arranged so that when the sensed R.P.M is above a first predetermined value movement of a first portion of the lever arrangement will result in operation of the brake function and
15 wherein when the sensed R.P.M. is below the first predetermined value movement of the first portion of the lever arrangement will result in operation of the brake function and the clutch function so as to prevent stalling of the engine.

20 36. A dual function handlebar mounted actuator according to claim 35 wherein initial movement of a second portion of the lever arrangement results in operation of the clutch function independently of the brake function, and that further movement of the second portion of the lever arrangement results in operation of both the clutch function and the brake function.

25 37. A dual function handlebar mounted actuator according to claim 35 or claim 37 further including indication means arranged to signal to the user that the brake function has been initiated when the second portion of the lever arrangement is moved.

30 38. A dual function handle bar mounted actuator according to claim 37 wherein the indication means includes a tactile indication to the user.

39. A dual function handlebar mounted actuator according to any one of claims 35 to 38 further including adjustment means arranged to adjust the point at which the clutch function is activated.

5 40. A dual function handle bar mounted actuator according to any one of claims 35 to 39 further including adjustment means arranged to adjust the point at which the brake function is activated.

10 41. A dual function handlebar mounted actuator according to any one of claims 35 to 40 further including a brake function control unit arranged to lock on the brake function when the engine R.P.M. is above the first predetermined value.

15 42. A dual function handlebar mounted actuator for a vehicle having an engine including a hand operated lever arrangement and a selector means, said lever arrangement arranged so that when the selector means is in a first position (C) movement of the lever arrangement in a first direction (A) activates a switch so that a clutch function is operated and continued movement of the lever arrangement in the first direction operates a brake function, said lever
20 arrangement further arranged so that movement of the lever arrangement in a first direction when the selector means is in a second position (B) operates the brake function and will also operate the clutch function when the R.P.M. of the vehicle's engine falls below a predetermined value.

25 43. A dual function handlebar mounted actuator according to claim 42 wherein the selector means includes a spindle arranged for connection to said lever arrangement.

30 44. A dual function handlebar mounted actuator according to claim 43 wherein the spindle is mounted for rotational and sliding movement.

45. A dual function handlebar mounted actuator according to any one of claims 42 to 44 further including adjustment means arranged so that when the

selector means is in the second position (B) and the lever arrangement is moved in the first direction the point of activation of the brake function and the clutch function can be adjusted.

5 46. A dual function handlebar mounted actuator according to any one of claims 42 to 45 further including a control unit, said control unit including a brake solenoid, means for sensing the R.P.M of the engine and a switch arranged to activate when the R.P.M of the vehicle's engine falls below the predetermined value.

10

47. A dual function handlebar mounted actuator according to claim 46 arranged so that when the R.P.M of the engine falls below a predetermined value the R.P.M switch is activated so as to open the brake solenoid and operate the clutch function to prevent stalling of the engine.

15

48. A dual function handlebar mounted actuator according to any one of claims 42 to 47 wherein the force required for operation of the clutch function and/or the brake function can be partially or fully provided by operation of a foot pedal.

20

49. A dual function handlebar mounted actuator including a hand operated lever arrangement arranged for movement in a first direction (A), said movement serving to operate a first function, said lever arrangement being further arranged for movement in a second direction (B), said movement serving to operate a second function, and wherein the actuator further includes a combined function means arranged so that when said lever arrangement is moved in said first direction to an initiation point said combined function means causes said lever arrangement to also move in said second direction so that both the first function and the second function are operated.

25 30

50. A dual function handlebar mounted actuator according to claim 49 further including adjustment means arranged to adjust the initiation point at which the

lever arrangement is caused by said combined function means to move in the second direction.

51. A dual function handlebar mounted actuator according to claim 49 or
5 claim 50 wherein said combined function means includes a cam means and a cam surface, said cam surface being arranged so that when said cam means is driven there along said lever arrangement is caused to move in said second direction .

10 52. A dual function handlebar mounted actuator according to any one of claims 49 to 51 wherein the lever arrangement can also be moved in the second direction upon operation of a foot pedal.

53. A dual function handlebar mounted actuator including a hand operated
15 lever arrangement pivotally connected to a mount, said lever arrangement including a first function operating means, actuation means pivotally connected to said mount and arranged for connection to a second function operating means, said first and second function operating means being linked so that
20 when said lever arrangement is pivoted to a first point a first function will be operated and when said lever arrangement is pivoted to a second point the first function and a second function will be operated.

54. A dual function handlebar mounted actuator according to claim 53
..... wherein the actuation means is connected to an operating member which is
25 arranged to pivot the actuation means about said pivot point to operate said second function.

55. A dual function handlebar mounted actuator according to claim 54
wherein said operating member includes a foot operated pedal.

30

56. A dual function handlebar mounted actuator according to any one of claims 53 to 55 wherein the first function operating means includes a cam surface and a cam follower arranged to run against said cam.

57. A dual function handlebar mounted actuator according to claim 56 wherein the first function operating means further includes a first function cylinder and a first function piston and wherein the cam surface is profiled so that once said first function is operated further pivotal movement of said lever arrangement will result in substantially no movement of said first function piston.

58. A dual function handlebar mounted actuator according to any one of claims 53 to 57 further including first adjustor means for adjusting the point at which the second function is operated upon pivotal movement of the lever arrangement.

59. A dual function handlebar mounted actuator according to claim 58 wherein the first adjustor means includes a threaded member mounted on the lever arrangement having a portion arranged to contact the actuation means so as to initiate pivotal movement of the actuation means.

60. A dual function handlebar mounted actuator according to any one of claims 53 to 59 further including a spindle mounted on the lever arrangement.

61. A dual function handlebar mounted actuator according to any one of claims 53 to 60 further including second adjustor means for adjusting the point at which the first function is operated upon pivotal movement of the actuation means.

62. A dual function handlebar mounted actuator according to claim 61 wherein the second adjustor means includes a threaded member mounted on the actuation means having a portion arranged to contact the lever arrangement so as to initiate pivotal movement of the lever arrangement.

63. A dual function handlebar mounted actuator including a main lever, a first function operating arm arranged to operate a first function and a second function operating arm arranged to operate a second function, said first function

operating arm and said second function operating arm being linked so that a combined first and second function can be operated, and wherein movement of said main lever in a first direction results in operation of the first function and movement of said main lever in a second direction results in operation of said second function.

64. A dual function handlebar mounted actuator according to claim 63 wherein movement of said first function operating arm will result in operation of said first function and continued movement of said first function operating arm results in operation of said combined function and wherein movement of said second function operating arm will result in operation of said second function and continued movement of said second function operating arm results in operation of said combined function

65. A dual function handlebar mounted actuator according to claim 63 or claim 64 wherein said first and said second function operating arms are pivotally mounted about a first pivot point.

66. A dual function handlebar mounted actuator according to claim 65 wherein the main lever is attached to a cam arrangement arranged to contact said second function operating arm so that when the main lever is moved in said second direction the cam arrangement causes the second function operating arm to pivot about the first pivot point and operate the second function.

25

67. A dual function handlebar mounted actuator according to any one of claims 63 to 66 wherein the first function operating arm includes a cam surface arranged to contact a cam roller arrangement such that movement of the first function operating arm in the first direction causes the cam roller arrangement to operate the first function.

30

68. A dual function handlebar mounted actuator according to any one of claims 63 to 67 further including a foot control pedal arranged such that activation of the foot control pedal results in operation of the second function.

5 69. A dual function handlebar mounted actuator according to claim 68 wherein activation of the foot control pedal causes the second function operating arm to pivot about the first pivot point so as to operate said second function.

10 70. A dual function handlebar mounted actuator according to any one of the preceding claims wherein said first function and/or said second function may be activated by a foot operated control.

15 71. A dual function handlebar mounted actuator according to any one of the preceding claims wherein the first function is a clutch function and once the clutch function is initiated so as to disengage a clutch of a vehicle, any further travel of the lever arrangement requires little or no additional force to be applied to the lever arrangement by a user.

20 72. A dual function handlebar mounted actuator according to any one of the preceding claims wherein an overlap between the first and second functions can be varied by a user during use of a vehicle to which the actuator is attached.

25 73. A dual function handle bar mounted actuator according to any one of the preceding claims including an actuator arrangement including a lever movable between a first and a second position and a master cylinder having a piston, said lever being arranged so that when it is moved towards said second position said piston is driven from an initial position to thereby increase pressure within
30 the master cylinder and wherein when said lever is released the pressure within the master cylinder is arranged to return the piston towards the initial position, said piston being returned fully to the initial position upon movement of the lever to the first position.

74. A dual function handlebar mounted actuator according to claim 73 further including an adjustor member connected between the lever and the master cylinder, said adjustor member being arranged to enable some free play
5 between the movement of the lever and movement of the piston of the master cylinder.

75. A dual function handlebar mounted actuator according to any one of the preceding claims wherein the first function is a clutch function and the second
10 function is a brake function.

76. An actuator arrangement including a lever movable between a first and a second position and a master cylinder having a piston, said lever being arranged so that when it is moved towards said second position said piston is
15 driven from an initial position to thereby increase pressure within the master cylinder and wherein when said lever is released the pressure within the master cylinder is arranged to return the piston towards the initial position, said piston being returned fully to the initial position upon movement of the lever to the first position.

20 77. An actuator arrangement according to claim 76 further including an adjustor member connected between the lever and the master cylinder, said adjustor member being arranged to enable some free play between the movement of the lever and movement of the piston of the master cylinder.

25 78. An actuator arrangement according to claim 76 or claim 77 arranged to be operated by a user's hand or by foot operation or a combination thereof.